

CALIFORNIA OCCUPATIONAL GUIDES

LABORATORY ASSISTANTS AND TECHNICIANS (EXCEPT HEALTH)

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INTEREST AREA
SCIENTIFIC



WHAT DO LABORATORY ASSISTANTS AND TECHNICIANS DO?

LABORATORY ASSISTANTS AND TECHNICIANS help chemists, physicists, and other scientists in conducting tests, experiments, and analyses. Laboratory Assistants and Technicians are employed in a wide variety of industries such as food processing, chemical production, environmental monitoring, agricultural and pharmaceutical research. Specific duties vary according to the industry, the purpose of the laboratory, and the type of tests completed. Typically, Laboratory Assistants work at the entry level under close supervision performing routine tasks in processing or preparing laboratory specimens and materials.

Medical and dental laboratory workers require distinct specialized skills and knowledge. See Related Occupational Guides section.

The following are the most common tasks a Laboratory Assistant and Technician may perform:

- Set up laboratory and field equipment to assist research workers.
- Clean, sterilize, and maintain laboratory equipment and work areas.
- Collect specimens from appropriate sources.
- Prepare samples for testing and analysis.
- Operate laboratory equipment common to laboratories such as microscopes, spectrophotometers, and autoanalyzers.
- Weigh, analyze, and measure ingredients used in testing.
- Calibrate microscopes.
- Record and compile test results.
- Enter test results into computerized databases and/or data entry books.
- Prepare charts, graphs, spreadsheets, chromatograms, and reports using a variety of software.

Laboratory Assistant is generally the entry-level position for this occupation. In contrast, Laboratory Technicians perform the more specialized complex tasks that require more training and experience: preparing solutions and reagents, assisting in product development, installing and repairing laboratory equipment, performing experimental testing, maintaining quality control records, and writing test result analysis reports. Technicians may also supervise subordinates.

Laboratory Technicians employed in specialty fields may perform the following tasks:

Agricultural/Biological Technicians

- Plant seeds in a designated area to determine the rate of seed germination.

- Examine animals and specimens to determine the presence of disease.
- Collect blood samples from animals for testing.
- Feed and water laboratory animals.
- Prepare culture media according to standard laboratory procedures.

Chemical Technicians

- Prepare chemical solutions.
- Prepare experimental solutions.
- Test and analyze the chemical properties of liquids, solids, gases, and biological substances.
- Guide other laboratory workers in compounding and distilling chemicals.

Food Science Technicians

- Conduct standardized tests to determine the physical and chemical properties of food, beverages, additives, and preservatives to compare the results with product specifications for nutrients, color, and texture.
- Smell and/or taste food or beverage samples to assure that flavor meets test specifications.
- Blend or mix substances to create reagents or manufacture foods.
- Use mathematics and chemical procedures to compute the moisture, salt content, or percentage of ingredients.
- Use a microscope to study specimens to identify cell structure or bacteria.
- Perform test runs and evaluations of new product performance.

Environmental Science Technicians

- Gather gas, soil, water, and asbestos product samples for pollutant level testing.
- Use laboratory instruments to complete chemical tests on collected samples to determine compliance with pollution standards.
- Use chemical or mathematical formulas to determine the level of pollutants in test samples.
- Assemble field equipment to observe and gather pollutant samples from manufacturing plants.

Forensic Science Technicians

- Gather and preserve crime scene evidence samples.
- Perform standardized laboratory tests on tissue samples, physical materials, and chemical substances.
- Provide expert evidence testimony at criminal trials.

WHAT SKILLS ARE IMPORTANT?

Important skills, knowledge, and abilities for Laboratory Assistants and Technicians include:

- Science – Knowledge of scientific methods to solve problems.
- Mathematics – Knowledge and use of arithmetic and algebra, including how to use mathematics to solve problems.
- Problem Identification – Knowledge of how to identify the nature of problems.
- Equipment Selection – Knowledge of the kind of tools and equipment needed to do a job.
- Information Gathering – Knowledge of how to find information and identify essential information.
- Information Organization – Determining the method of structuring or classifying multiple pieces of information.
- Critical Thinking – Using logic and analysis to identify the strengths and weaknesses of different approaches.
- Solution Appraisal – Observing and evaluating the outcomes of a problem solution to identify lessons learned or redirect efforts.
- Computers – Knowledge of personal computers and software applications.

WHAT'S THE WORK ENVIRONMENT?

Laboratory Assistants and Technicians generally work in clean, well-lighted, and well-ventilated laboratories. Standing for long periods of time is common for these workers. Laboratory employees may be exposed to strong odors and potential hazards from equipment, chemicals, or toxic materials. However, the risks are small when proper laboratory safety procedures are followed.

Depending upon the industry, Laboratory Assistants and Technicians may occasionally work in the field to collect samples, set up and monitor equipment, or conduct testing.

Union Membership

Union membership requirements vary widely. Generally, academic and government employees belong to unions.

WHAT'S THE CALIFORNIA JOB OUTLOOK?

The following information is from the occupational projections produced by the Employment Development Department's Labor Market Information Division. The figures represent the broad occupational group Physical, Life Science Technicians, which includes Laboratory Assistants and Technicians.

Estimated number of workers in 1998:	24,100
Estimated number of workers in 2008:	29,300
Projected Growth 1998-2008:	21.6%
Est. openings due to separations by 2008:	6,100

These figures do not include self-employment.

The projected growth rate of 21.6% indicates that Laboratory Assistant and Technician occupations are growing at an average rate compared with all occupations in California.

Trends

The current manpower needs are driven by new product development, consumer demand for product and food safety, and regulatory requirements for environmental protection and monitoring.

WHAT DOES THE JOB PAY?

California Earnings

Laboratory Assistants and Technicians 2001 Wages*

Hourly wages range from	\$13.08	to	\$21.83
Average hourly wage	\$17.82		
Average annual wage	\$37,056		

Source: *Occupational Employment Survey of Employers by EDD/LMID.*

* These figures represent a broader occupational group which includes all Life, Physical, and Social Science Technicians.

Wages vary widely according to education, experience, ability, complexity of the work, type of employer, and geographical location.

Hours

Laboratory Assistants and Technicians usually work regular hours, 40 hours per week. However, some employers may require shift work and occasional overtime to oversee experiments that cannot be completed during the regular workday.

Benefits

Benefit packages vary widely; however, many employers offer sick leave, holidays, vacation, health insurance, and retirement plans.

HOW DO I PREPARE FOR THE JOB?

Education and Training

Although the position titles of Laboratory Assistant and Technician are often used interchangeably, the Laboratory Assistant is generally the entry-level position requiring a high school diploma. Technician positions generally require a two-year associate of arts degree from a community college or certificate from a two-year program at a technical college. Technological advances increase the necessity for a bachelor's degree with emphasis in a science appropriate to the position. This is particularly true for the specialist Technician positions. Typically, formal education is required with a major concentration in biology, chemistry, food science, life sciences, or physics. In addition to formal education, many employers prefer from one to three years of laboratory experience. Some employers may substitute work experience requirements with education on a year for year basis up to four years.

High school preparation courses for Laboratory Assistant and Technician careers should include biology, chemistry, computer sciences, mathematics, and physics.

Licensing and Certification

A State license is not required for a Laboratory Assistant and Technician (Except Health).

Continuing Education

Rapid technological changes necessitate periodic skills updating through outside reading or enrollment in local community college courses. Additionally, completing a bachelor's degree in physical or life science enhances career advancement opportunities.

HOW DO I FIND THE JOB?

The majority of Laboratory Assistants and Technicians are employed with research and testing firms, management and public relations, colleges and universities, and federal, State, or local government.

Direct application to employers remains one of the most effective job search methods. Private firms are listed in the yellow pages under Laboratories: Analytical, Biological or Testing. Other helpful resources include professional science journals, and university/college or technical school placement offices. Additionally, California job openings can be found at various online job-listing systems including CalJOBSSM at www.caljobs.ca.gov or at America's Job Bank at www.ajb.dni.us.

For other occupational and wage information and a listing of the largest employers in any county, visit the Employment Development Department Labor Market Information Web page at www.calmis.ca.gov. Find further job search assistance from your nearest Job Service office www.edd.ca.gov/jsloc.htm or the closest One-Stop site listed on the California WorkNet site, www.sjtcc.ca.gov/sjtccweb/one-stop.

WHERE CAN THIS JOB LEAD?

Laboratory Assistant is an entry-level position where skills are usually developed through on-the-job training. In large organizations there may be opportunities to advance to Laboratory Technician. Laboratory Technicians may advance to laboratory supervision or management positions. Advancement opportunities beyond the Technician level depend upon education, experience, and ability.

OTHER SOURCES OF INFORMATION

American Chemical Society
1155 Sixteenth Street, NW
Washington, DC 20036
(800) 227-5558
Fax: (202) 872-4615
www.acs.org

American Institute of Biological Sciences
1444 Eye Street, NW, Suite 200
Washington, DC 20005
(202) 628-1500
Fax: (202) 628-1509
www.aibs.org

Society of Industrial Microbiology
3929 Old Lee Highway, Suite 92A
Fairfax, VA 22030-2421
(703) 691-3357
Fax: (703) 691-7991
www.simhq.org

Biotechnology Industry Organization
1225 Eye Street, NW, Suite 400
Washington, DC 20005
(202) 962-9200
www.bio.org

Employment Projections by Occupation
www.calmis.ca.gov/htmlfile/subject/occproj.htm

Employment and Wages by Occupation
[www.calmis.ca.gov/file/occup\\$/OES\\$.htm](http://www.calmis.ca.gov/file/occup$/OES$.htm)

RELATED OCCUPATIONAL GUIDES

Medical and Clinical Laboratory Technologists	No. 17
Chemists	No. 22
Dental Laboratory Technicians	No. 243
Criminalists	No. 558

OCCUPATIONAL CODE REFERENCES

SOC (Standard Occupational Classification)	
Environmental Science and Protection Technicians, Including Health	19-4091
Forensic Science Technicians	19-4092
Life, Physical, and Social Science Technicians	19-4099

O*NET (*Occupational Information Network*)

Food Science Technicians	19-4011.02
Biological Technicians	19-4021.00
Chemical Technicians	19-4031.00
Environmental Science and Protection Technicians, Including Health	19-4091.00

OES (*Occupational Employment Statistics*)

Physical, Life Science Technicians	24500
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DOT (*Dictionary of Occupational Titles*)

Laboratory Assistant	024.381.010
Laboratory Tester	029.261.010
Laboratory Technician	029.361.018